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ABSTRACT

This study investigated the relative ability of literate (n=24), semi-literate (n=45), and non-literate (n=21) adults to erase the initial consonant or vowel from non-words and pronounce the remaining phonemes. It was hypothesized that difficulty in removing the initial consonant from the vowel with which it coarticulates is due not only to perceptual immaturity but also, and primarily, to undeveloped metaphonological abilities only acquired with literacy. Results indicate that the literate subjects did not completely succeed in erasing initial consonants, and none of the groups succeeded in completely erasing the initial vowel. Semi-literates performed poorly, confirming non-mastery of phoneme-grapheme correspondence rules. Error patterns suggest that (1) illiterate and semi-literate subjects could not properly follow instructions and were compelled to seek the word's meaning, the goal in natural communication; and (2) repetitions and perseverations indicate only the shallowest physical decoding (echoic response). It is concluded that while the results do not fully confirm the hypothesis, they demonstrate the effect of mastering the alphabetic code on the ability to adhere to the instructions and to the decontextualized acoustic signal. (MSE)

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THE ROLE OF CONTEXT TO GUARANTEE THE OPTIMIZATION OF LINGUISTIC COMMUNICATION

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THE ROLE OF CONTEXT TO GUARANTEE THE OPTIMIZATION OF LINGUISTIC COMMUNICATION

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Data obtained from a test of erasing an initial consonant or vowel (the latter also a syllable) of non-words will be presented and discussed to prove the inefficiency of processing when depending solely on acoustic decontextualized data, although conforming to a particular phonological system mastered by the subject.

The experimental paradigm was the same as that used by the Laboratoire de Psychologie Experimentale of the Université Libre de Bruxelles, which asserts that knowledge for using the automatic unconscious processing of the speech acoustic signal is not dependent on the mastering of alphabetic codes. This is not the case for metaphonological abilities necessary in desmembering the syllable in its constituents.

The test was applied to confirm or disconfirm the hypothesis that the difficulty in dismembering the initial consonant from the vowel with which it coarticulates is not only due to perceptual immaturity but mainly to undeveloped metaphonological abilities which are only acquired with the mastering of alphabetic codes. The experiment, carried out with adults, was done in order to direct the Ss selective

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attention towards the lowest processing of the speech acoustic signal (non-words), isolating it from others, the goal of which is reaching meaning.

The specific hypothesis was that illiterates could not erase the initial consonant from the vowel of a non-word CVC (20 items), for instance,[fur]⟶[ur],although they could perform the job when it was the initial vowel (also a syllable) of a non-word V'CV, for instance [afu] ⟶ [fu] (20 items)(see appendix) ; semi-literates would perform better and literates would be totally successful in both tasks. The test would be applied when the experimenter was sure that the Ss had understood the instructions.

SUBJECTS: 91 Ss belonged to three groups, illiterates(G1:21 Ss); semi-literates (G2:45 Ss) and literates(G3:24 Ss). All of them lived in the state of São Paulo and were selected among a population of 252 people aged 15 to 50 years old. Acoustic and/or phonoarticulatory deficients and bilinguals were disregarded after assessment (Scliar-Cabral, 1981). Group 1 lived in the inland of the state of São Paulo and had neither attended school nor could recognize letters. G2 was constituted by Ss who had attended school no more than the 4th grade of primary school and could match words or small sentences with pictures and G3 were clerks from the cities of Tatuí and São Paulo, who have more than four years of schooling excluding high-school on. Most of them were good readers. The field research was carried out by a team conducted by L.A.Nepomuceno (1990).

RESULTS AND DISCUSSION

The following table shows results and respective percentiles of each group, according to the task.

(insert table 1 here)

Comparison of the percentiles of correct responses in the task of erasing the initial consonant demonstrates the difference in performance of groups 1 (2.8%) and 2(1.5%) against G3 (78.8%). The explanation given to the bad performance of semi-literatess is of two sorts:

1.Since they could only match words or sentences with pictures (no specific test to assess if they had already internalized the rules of graphemic-phonological correspondences was applied, that is, a test of reading non-words which obeyed those rules in the particular language of the Ss), it is possible that they recognized those words and sentences using configurational strategies and/or other hypotheses (in fact this was proved by their performance in a test of oral reading of a story: their reading was totally non-fluent, with many false guesses and gaps).

2.Since many of them were trying to learn reading and writing without achieving success (remember that they were adults, some of them attending the fourth grade), poor performance in the task could be explained by general difficulties in learning. Both explanations are not mutually exclusive and are coherent with the results shown in the

task of erasing the initial vowel, where semi-literates contributed with only 55.9% of the correct answers.

In the comparison of the results with those obtained by Morais and his team among illiterates, semi-literates and literates in Portugal, two differences must be pointed out: 1st, their Ss received previous training with many stimuli while in Brazil Ss were trained only with one stimulus; 2nd, the failure of education of illiterate adults in Brazil is publicly known.

The relatively worse performance of G3 in the task of erasing the initial consonant (78.8%), if compared with the Ss of Morais et al., may be also due to the low level of education in Brazil (specifically in reading and writing), in spite of the Ss having had more than 4 years of schooling.

Errors in answers were grouped in four main blocks in relation to the complexity of processing:

The 1st block included suppression of the 1st segment with distortions in the remaining sequence(SD), for instance:[fur] ⟶ [uj]and[apo]⟶[fo]; extraction of one of the segments (EX), for instance:[fow] ⟶ [f](since it is a +continuant consonant, it can be pronounced in 'solation); letter denomination (LD), for instance: [a'su] ⟶['ɛsi](name of the letter "s" in Portuguese); attempt for letter denomination (ALD:only among the Ss who had recurrently used LD), for instance:[fojs] ⟶ [ɛ].

The 2nd block included all the answers which led to lexical access (this was the case with repetitions of the segment which should be erased, for instance:[a ˈsa]⟶ [a ˈsado] ("baked") and even phrase expansions, for instance:[s ˈpo] ⟶ [a ˈpwejɾa ("the dust").

The 3rd block included distortions of stimuli without lexical access (WLA) maintaining the segment that should be erased with or without reanalysis, for instance:[fur] ⟶ [faj], or [fuj]⟶ [guj](Stimulus 2).

The 4th block included answers where only the shallowest physical level of decoding was entangled: Ss repeated echoically the stimuli or persevered over their previous answers. Absence of answers was also included in this 4th group.

Table 1 shows that G1 preferred lexical access more than G2. The performance of G3 demonstrates that this group could follow the instructions given by the experimenter in the majority of the cases, thus preventing the natural pathway which reaches lexical access and semantic mapping when the processing of the acoustic verbal signal in the communicative setting takes place. G3 gave only 14 (2.8%) answers with lexical access in the task of erasing the initial consonant (no answers of this type were given in the other task), against 132 (31.4%) from G1 and 161 (17.8%) from G2. Both these Gs gave respectively 90 (21.4%) and 109 (12.1%) of DLAs (distortions with lexical access) in the task of erasing the initial vowel. Among these answers given

by G3 in the task of erasing the initial consonant, the preferred type was the one which followed the instruction, that is, erasing the initial consonant (37 answers),which was not the case with Gs 1 and 2.

The more complex the task was, the more the less literate population tended to the shallowest level of decoding(Block 4): G1: 196 (46.6%) and G2:535 (59.4%), against 41 (8.2%) of G3 (this last group gave only 2 absences and 5 perseverations).

In this paper we will concentrate the discussion on blocks 2 and 3 of the types of answers, which illustrate more clearly the role of context to guarantee the optimization of linguistic oral communication.

(insert Tables 2 and 3 here)

The processing of the acoustic verbal signal in a natural setting follows two interacting and compensatory pathways:

1. bottom-up, from the shallowest physical level of decoding and

2. top-down, allowing the recognition of the relevant cues of a particular language, in order to

2.1 extract the phonetic features from acoustic cues

2.2 synthesize them in a phoneme

2.3 rearrange the phonemes into morphemes for recognition of particular units in the mental lexicon

2.4 atribute them meaning.

In a natural setting, contextual cues and previous knowledge (both linguistic and of the world) are used by the listener to correct hypotheses while recognizing the speech signal.

Blocks 2 and 3 of answers of G1 and G2 show the distortions the Ss are compelled to, if they are not trained for allocating attention to the acoustic cues when asked to solve a difficult task(which is the case of Gs 1 and 2): they tend to these distortions either in order to accomodate the representations of the speech signal to ones which allow lexical access (the natural pathway in the communicative setting) or simply because it is difficult to retain in short term memory the representation of signals the function of which is only to solve a difficult experimental task for them. Tables 2 and 3 show examples of both tendencies.

Observe that distortions (mainly when there is lexical access), with only one exception, follow the phonemic rules of the Portuguese language: there is only one answer f rs, which disobeys a phonotactic rule, although it existed in Latin (pars, partis; mors, mortis, for instance) and many of them conform to the canonic vocabular pattern of the Portuguese language 'CVCV, for instance: [fɑw] ⟶ ['fogo] ("fire"), ['fomi] ("hunger"), ['fuma]("(he) smokes"), ['fomo] ("(we) went") when distortions lead to lexical access. Actually, Ss' answers with lexical access followed two concomitant major characteristics: conforming to the canonic vocabular structure of the Portuguese language and/or

frequency of use (for instance, occurrences of the verb to be (which is a homonym of the verb to go in the past perfect tense: [fuj] , [foj]).

Confirming the major difficulty in the task of erasing the initial consonant if compared with the one of erasing the vowel, most of the Ss who gave answers with lexical access in this last task also erased the vowel (G1:60 out of 90 LAs; G2:68 out of 109 LAs (G3 had no LAs in the test of erasing the initial vowel)), while in the test of erasing the initial consonant nobody have given LA erasing the initial segement: most of the Ss repeated it (G1:95; G2:113 and G3:7).

The same is true with distortions without lexical access (WLA): they were more frequent on the task of erasing the initial consonant (G1:72, G2:155 and G3: 4 against 17, 16 and 1, respectively, in the task of erasing the initial vowel).

CONCLUSIONS

Although the initial hypothesis has not been entirely confirmed, since neither literates (G3) have completely succeeded in the task of erasing the initial consonant from the vowel with which it coarticulates (78.8% of correct responses) nor did the three groups succeeded completely in the task of erasing the initial vowel (G1: 41.1%; G2:55.9% and G3: 92.8% of correct responses), it is without doubt the effect of literacy on the task of dismembering the syllable,

since Gs 1 and 2 only obtained 2.8% and 1.5% of correct responses in this task.

The poor performance of the group of semi-literates can be attributed to the fact that they have not entirely mastered the rules of phonemic-graphemic correspondences, which was proved in another task of reading aloud and/or to some learning difficulties, since most of them were trying for some years to become literate without success.

Neverthless, all groups improved their performance in the task of erasing the initial vowel (also a syllable), although Gs 2 and 3 have produced many deviant responses.

The kinds of errors pointed towards two main directions: lexical access and repetitions/perseverations. Lexical access is a type of answer which demonstrates that illiterates and semi-literates could not properly follow instructions given by the experimenter: they were compelled to reach meaning, which is the final goal in a natural setting. Repetitions and perseverations were the answers where only the shallowest physical level of decoding was entangled (echoic responses).

The low number of correct responses obtained by Gs 1 and 2 (2.8 and 1.5%, respectively) in the test of erasing the initial consonant from the vowel with which it coarticulates demonstrates the effect of mastering the alphabetic code on that ability: subjects demonstrated difficulty to adhere properly to the instructions given by the experimenter and, consequently, to the acoustic signal,

which was decontextualized and did not serve to the communicative function.

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	CONSONANT						VOWEL					
	G1	%	G2	%	G3	%	G1	%	G2	%	G3	%
CORRECT	12	2.8	14	1.5	394	78.8	173	41.1	495	55.8	464	92.8
SUBTOTAL			420						1100			
TYPES OF ERRORS												
BLOCK 1		%		%		%		%		%		%
Suppression with distortions(SD)	5	1.1	12	1.3	37	7.4	21	5.0	61	6.7	4	0.8
Extraction of segment (EX)	3	0.7	6	0.6	10	2.	17	4.0	27	3.0	24	4.8
Letter denomination(LD)	-		13	1.4	-		-		8	0.8	-.	
Attempt of "	-		4	0.4	-		-		5	0.5	-	
	8	1.9	35	3.8	47	9.4	38	9.0	101	11.2	28	5.6
SUBTOTAL			90						167			
BLOCK 2 (LA)		%		%		%		%		%		%
Lexical access	132	31.4	161	17.8	14	2.8	90	21.4	109	12.1		-
SUBTOTAL			307						199			
BLOCK 3 (WLA)		%		%		%		%		%		%
Distortions without lexical accesss maintaining the initial segment or reanalyzing it (including aleatory answers)	72	17.4	155	17.2	4	0.8	17	4.4	16	1.7	1	0.2
SUBTOTAL			231						34			
BLOCK 4		%		%		%		%		%		%
Repetitions, perseverations, null	196	46.6	535	59.4	41	8.2	102	24.2	179	19.8	7	1.4
SUBTOTAL			772						288			
TOTAL	420		900		500		420		900		500	

TABLE 1. **Results and percentiles of answers according to groups of Ss and blocks of types of answers in a test of erasing an initial consonant and vowel.**

	LEXICAL ACCESS (LA)				WITHOUT LEXICAL ACCESS(WLA)	
Stimulus	Answer	Translation	Subjects		Answer	Subjects
1. **fɔj**	fuj	(I) went was	G1:1,7,18,21		fɾɔ	G1:14
			G2:11,20,23,44		fɔw	G2: 6
					fej	7
					fo	25
	foj	(he)went was	G1:8,20		fɔ	G3: 1
			G2:4,15,21,22			
			32,38			
	ˊfoj	leaf	G3:15			
2. **fũj**	fĨ	end	G1:1,3,11,13			
			14,16,18			
			G2:1,12,3			
			G3:9			
14. **fõw**	ˊfogo	fire	G1:2		fu	G1:2,12
	ˊfomi	hunger	19		fu	21
	ˊfuma	(he)smokes	G2:20		fɔj	G2:2,22
	ˊfomo	(we)went	35		fo	26,28

Table 2. **Examples of distortions with lexical access (LA) and without lexical access (WLA), in the test of erasing the initial consonant.**

	LEXICAL ACCESS (LA)				WITHOUT LEXICAL ACCESS (WLA)	
Stimulus	Answer	Translation	Subjects		Answer	Subjects
7. a ˊpõw	pə̃w	bread	G1:2,4,10,19		a ˊfõw	G1:3
					a ˊpə̃w	11
	ˊpõbʁ	pidgeon	G2:7		a ˊpɔ	G2:16
	ˊpeɲʁ	rock	34			
	pɛ	foot			po	G3:17
11. **a ˊkə̃**	ˊkənɐ	sugar cane	G1:2		a ˊkuj	G1:21
			G2:33		a ˊpɔ	G2:16
	ˊkə̃mɐ	bed	G1:4,10			
	ˊkə̃tɐ	(he)sings	G2:15			
	kɛ	(he)wants	34,36			
13. **a ˊsu**	ˊsukʁ	sugar	G1:4		a ˊsu	G1:11
	ˊʃuvɐ	rain	10			
	ˊsũtu	plot	G2:15			
	a ˊsũtu	"	4,22			
	sɔ	alone	34			

Table 3. **Examples of distortions with lexical acess (LA) and without lexical access(WLA), in the test of erasing the initial vowel (also syllable).**

APPENDIX

LIST OF STIMULI

	Test of erasing the initial consonant	Test of erasing the initial vowel (also a syllable)
1.	fɔj	a ˈsu
2.	fũj	a ˈtã
3.	fur	a ˈkɔ
4.	fə̃j	a ˈpĩ
5.	fɛj	a ˈle
6.	fõws	a ˈfu
7.	fɔw	a ˈpõw
8.	fojs	a ˈlɔ
9.	fẽjs	a ˈpu
10.	fɔr	a ˈfi
11.	fə̃w	a ˈkã
12.	fej	a ˈfɔ
13.	fɛr	a ˈsũ
14.	fów	a ˈko
15.	fos	a ˈpẽj
16.	fõj	a ˈfo
17.	faw	a ˈsa
18.	fer	a ˈtɔ
19.	fẽj	a ˈfũ
20.	fus	a ˈpo